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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/697,763	10/30/2003	Heikki Heikkila	17195	9032

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EXAMINER

KHARE, DEVESH

ART UNIT PAPER NUMBER

1623

DATE MAILED: 03/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/697,763	Applicant(s) HEIKKILA ET AL.	
	Examiner Devesh Khare	Art Unit 1623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 10 November 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-9, 11, 12, 14-38, 40 and 44-62 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9, 11, 12, 14-38, 40 and 44-62 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date: _____ | 6) <input type="checkbox"/> Other: _____  |

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Applicant's amendments and remarks filed on 11/10/2005 are acknowledged. Claims 1,7,8,14,19,22-27,29-31,34,50-54, and 58 have been amended. Claims 10,13, 39,41-43, and 63-74 have been cancelled.

The objection and rejection under 35 U.S.C. 112, second paragraph of the Office Action mailed on 08/09/2005, have been withdrawn in view of applicants' amendments and comments. The rejection of claims 1-9,11,12, 14-38, 40, 44-46, 61 and 62 under 35 U.S.C. 103(a) of the Office Action mailed on 08/09/2005, has been withdrawn in view of applicants' amendments and comments.

IDS submitted on 1449 form filed on 5/3/2004 has been considered.

The following is new rejection(s) necessitated by Applicant's amendment filed on 11/10/2005.

Claims 1-9,11,12, 14-38, 40, 44-62 are currently pending in this application.

**Minor objections**

1. Claims 50 and 51 are objected to because of the following informalities:

Claims 50 and 51 depend on higher numbered claims 51 and 52.

Appropriate correction is required.

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-9,11,12, 14-38, 40, 44-46, 61 and 62 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to

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reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The amended phrase "hydrolyze more than 50% of the heteropolymeric arabinose present in the vegetable fiber into monomeric arabinose" in claim 1(step "a") does not have adequate support in the specification. The specification states on page 43, lines 10-15, Example 10, hydrolysis of gum Arabic and further on page 13, line 30, the data suggests "heteropolymeric arabinose typically contains arabinose in an amount of more than 15%, preferably more than 35%..." and arabinose content of the hydrolyzate. However, a statement of hydrolyzing more than 50% of the heteropolymeric arabinose present in the vegetable fiber into monomeric arabinose does not constitute a sufficient written description for hydrolyzing more than 50% of the heteropolymeric arabinose.

### **35 U.S.C. 103(a) rejection**

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

*(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.*

Claims **47-60** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ingle et al. (Ingle) (Res. & Ind. 30, 369-373, 1985) in view of Antila et al. (Antila) (U.S. Patent 6,506,897) of record.

Ingle teaches a process to prepare arabinose from gum ghatti (abstract). Ingle discloses that the vegetable fiber exudates gum ghatti is mainly composed of L-

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arabinose and also contains other monosaccharides such as galactose and mannose (col. 4, lines 22-26). Ingle discloses a process to recover L-arabinose from the said gum by carrying out an acid hydrolysis in the range of 90- 92<sup>0</sup> C followed by neutralization (page 370, col. 2, Experimental procedure, 1<sup>st</sup> para.). The crystallization of L-arabinose at -5<sup>0</sup> C is disclosed (page 371, col.1, 1<sup>st</sup> para.). Furthermore, Ingle discloses a slight impurity of galactose along with the crystallized L-arabinose (page 371, col.1, 3<sup>rd</sup> para.). Ingle differs from the applicant's invention in that Ingle does not provide the crystallization by boiling as claimed.

Antila teaches the purification of L-arabinose by chromatographic separation of L-arabinose by means of cation and anion exchangers and adsorbent resins followed by the recovery of L-arabinose by crystallization (abstract). Antila disclose the preparation of L-arabinose by acid hydrolysis from arabinose –containing vegetable materials such as gum Arabic and sugar beet pulp (col.1, lines 15-20). Antila discloses the use of cation and anion resins in the purification and color removal of L-arabinose preceding to the crystallization of L-arabinose (col. 1, lines 60-65). Antila discloses the boiling and cooling crystallization of L-arabinose (col. 2, lines 60-65) resulted arabinose in purity over 98% (col. 3, lines 35-40). Antila discloses that first the crude solution (aqueous: col.1, line 41) containing arabinose is heated to concentrate the mixture then arabinose is crystallized from the said solution at room temperature (col.3, Example 1, lines 40-45). The heating of crude arabinose solution prior to crystallization would be obvious to one skilled in this art in view of the prior art which discloses that the purified solution of

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arabinose is heated to concentrate to 70 percent by weight, seeded with arabinose crystals and allowed by cooling to room temperature (col.3, lines 39-42). Antila does not disclose the presence of any galactose impurity in the arabinose preparation, therefore one skilled in the art would assume the impurity in arabinose preparation do not exceed as set forth in claims 44-46.

Therefore, one of ordinary skill in the art would have found the applicants claimed process of recovering arabinose by boiling crystallization, to have been obvious at the time the invention was made having the above-cited references before him. Since Ingle discloses the purification of arabinose from gum ghatti by crystallization at lower temperature and Antila discloses the recovery of L-arabinose by boiling and cooling crystallization, one skilled in the art would have a reasonable expectation for success in combining the cited references to obtain arabinose crystals from the crude solution by the process of boiling (evaporation) and cooling. Antila provides the motivation to obtain L-arabinose in crystalline form with good yields by heating/cooling procedure to avoid multiple separation and purification steps (col.1, lines 35-40).

### **Response to Arguments**

Applicant's arguments traversing the rejection of claims 47-60 under 35 U.S.C 103(a) have been fully considered but they are not persuasive.

Applicant argues, "In the present invention boiling crystallization step of the process of the present application, the boiling crystallization step occurs immediately subsequent to the seeding step. In Antila et al., which also practices crystallization subsequent to seeding is a cooling step".

It is noted that the applicant discloses in specification on page 23, lines 30-35, "the solution is seeded and the evaporation is continued at the boiling point of the crystallization mass (i.e the mixture of the supersaturated solution and crystals) to obtain improved crystal size distribution and yield."

The heating of crude arabinose solution prior to crystallization to accomplish a supersaturated solution would be obvious to one skilled in this art in view of Antila et al. which discloses that the purified solution of arabinose is heated to concentrate to 70 percent by weight, seeded with arabinose crystals and allowed by cooling to room temperature to accomplish crystallization (col.3, lines 39-42). In the instant case, the use of the mixture of the supersaturated solution and seeding, would be considered an inherent property of a supersaturated arabinose solution which can be used to crystallize arabinose in improved yield disclosed in the prior art, absent any clear and convincing evidence and/or arguments to the contrary.

2. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office Action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07 (a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


Any inquiry concerning this communication or earlier communications from the

Examiner should be directed to Devesh Khare whose telephone number is (571)272-0653. The examiner can normally be reached on Monday to Friday from 8:00 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anna Jiang, Supervisory Patent Examiner, Art Unit 1623 can be reached at (571)272-0627. The official fax phone numbers for the organization where this application or proceeding is assigned is (703) 308-4556 or 308-4242.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1235.

Devesh Khare, Ph.D.,J.D.  
Art Unit 1623  
March 13, 2006

  
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